Status of implementation of *SALMON AQUACULTURE REVIEW* recommendations

Summary of Recommendation	Action to Date	Future/Ongoing Activities	Sub-Recommendation(s) not Adopted
SALMON FARM SITING			
❖ 1. Establish Regional Fish Farm Review Committees	✦ Fish Farm Review Committee (FFRC) established January 2000 with membership from MAFF, MWLAP, LWBC and DFO. ✦ This forum was replaced by the Project Review Team (PRT) in 2003. ✦ The PRT performs an initial assessment of farm application completeness before a full government review is initiated. This increases transparency and certainty for applicants and in turn improves effectiveness of government reviews. ✦ LWBC serves as the "one window" for incoming aquaculture applications, coordinating their review by government agencies and non-government referral groups.		✦ "Regional" FFRCs are not needed as tasks are accommodated through the single broad committee now in place. ✦ First Nations do not participate on the PRT, but are consulted directly by government and applicants and have input through the Salmon Aquaculture Implementation Advisory Committee (SAIAC), referrals from LWBC, open houses, etc. ✦ Local governments are not represented on the PRT but are involved through other means (e.g. application referrals).
❖ 2. Develop Integrated Coastal Zone Management Plans (ICZMPs) and Land and Resource Management Plans (LRMPs)	✦ MSRM is collaborating with other government agencies to develop ICZMPs at the provincial, sub-regional and local levels. ✦ Provincial level: The Province is working collaboratively with the federal government to implement the Canada Oceans Strategy. Development of a Pacific Coast Agreement within this strategy will ensure issues specific to the West Coast are addressed. ✦ Sub-regional level: Two LRMPs have coastal components – the Kalum Plan and the Central Coast Plan. Both address aquaculture at a broad policy level. The Kalum Plan has been approved by Cabinet and the Central Coast Marine Plan has received approval-in-principle. The Kalum Plan can be accessed at: http://srmrpdwww.env.gov.bc.ca/lrmp/kalum/index.htm ✦ Local level: The North Island Straits Coastal Plan for multiple resource use and the Baynes Sound Coastal Plan for shellfish aquaculture are complete.	✦ The Province will continue to support development and implementation of LRMPs/ICZMPs over the long term. ✦ The Central Coast Marine Plan is likely to require future modifications. Work is ongoing to finalize this plan. ✦ Multiple resource use coastal plans for Quatsino Sound, Kyuquot Sound, Malaspina Inlet Complex and Chatham Sound are underway. The Cortes Island Coastal Plan for Shellfish Aquaculture is also under development . A multiple use coastal plan is about to begin for the Johnstone Strait/Bute Inlet area. Information on coastal planning and specific coastal plans can be obtained at: http://srmwww.gov.bc.ca/rmd/coastal/planning/index.htm ✦ Future coastal planning will likely take place strictly at the local level.	
❖ 3. Prior to ICZMPs, government to identify and allocate suitable sites	✦ MSRM has identified areas suitable for aquaculture on a regional basis through Aquaculture Opportunity Studies (AOS). These studies have been completed for Kyuquot, Quatsino, North Island Straits, North Coast and Nootka regions. ✦ The province is undertaking an additional AOS as part of the Johnstone Strait/Bute Inlet planning process. ✦ Potential new sites are identified and assessed by industry; government performs comprehensive evaluations of all proposals based on strict requirements for siting, escape prevention, waste management, etc. ✦ LWBC and MAFF conduct on-site field assessments to determine the appropriateness of proposed sites.	✦ Provincial and federal governments are working toward harmonizing aspects of the site application review process (e.g. joint site advertising requirements and First Nations referrals). ✦ An aquaculture application guide for industry is nearing completion, and will assist with streamlining government review of proposed sites. ✦ Aquaculture Opportunity Studies will continue to be refined in order to improve mapping data and identification of suitable areas for salmon aquaculture.	

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4. Adopt revised siting criteria	• Revised siting criteria, as described in the Salmon Aquaculture Review, have been adopted without significant modification. • Specific siting criteria are applied as part of the evaluation of proposed new sites. • New application guide requires information on features found near proposed sites; government evaluates company-supplied information based on siting criteria.	• Province will revise siting criteria over time in order to respond to new information and new technology. • Siting policy for government evaluation of farm site applications is in use. Further refining is expected in order to keep evaluation criteria relevant to the current industry.	• Some recommended siting criteria have been modified based on new information, and/or to accommodate new technology and/or to allow for professional, scientific evaluation by government staff of site-specific conditions.
5. Applicants to provide assessments of proposed sites and their potential impacts on other resources and uses.	• Farmers must submit detailed, comprehensive assessments for any potential new sites, based on guidance provided by government. These company-prepared assessments are subject to a rigorous review by provincial and federal agencies. • Farmers must perform research on resources, uses and other environmental factors in the area of the proposed farm. • Other application components include diagrams of proposed facility structures, a professional review of mooring systems, data on ocean currents and marine conditions, habitat assessments, etc. • Input from third party professionals is sought when technical expertise is required; cost to operators of preparing a submission may be up to $100,000.	• Government is preparing a guide for the industry to assist with collecting information for site assessments. The guide will provide advice to proponents regarding environmental and social considerations around a potential site area. • The application guide is due for publication and release in 2003. Copies will be distributed to regulators and aquaculture companies and an electronic version will be available on the MAFF website.	
6. Continue to improve coastal resource inventory mapping	• MSRM has produced resource inventory maps identifying key social and ecological resources around all existing salmon farm tenures at a 1:40,000 scale. • New maps can be produced on request for potential sites. • MSRM can provide these maps to key government agencies and to industry and the public for a nominal fee. • Aquaculture Opportunity Studies (see #3) have resulted in the production of salmon aquaculture suitability maps at a smaller scale for several regions of the B.C. coast.	• Work is ongoing through MSRM to refine, update and improve coastal resource databases. • Government is working to improve access to this data through creation of on-line resource or through publication of a salmon farm siting CD-ROM. • Aquaculture Opportunity Studies will continue to be refined in order to improve mapping data and identification of suitable areas for salmon aquaculture.	
7. Ensure public participation in salmon aquaculture decisions through local advisory committees	• The Salmon Aquaculture Implementation Advisory Committee was formed to consult with representatives from a cross-section of interests. These representatives advise government on its salmon farming policy. • Input from local communities on all proposed new sites is solicited through open houses and through the referral and advertising processes. • Public input on some sites is also solicited through existing bodies at the regional level (e.g. Central Regional Board). • The intent of this recommendation has been met – the public has several ways to provide input on farm proposals.	• Government will continue to solicit input from all interested stakeholders through open houses, site application referrals, advertising, stakeholder meetings, etc. • See LRMP section (#2) for more information on local planning.	• "Local Advisory Committees" as recommended in the Salmon Aquaculture Review are not consistent with the siting mechanisms in use; a broader range of input can be obtained through open houses and other mechanisms. If existing bodies are deemed insufficient, the local advisory committee approach may be revisited.

Summary of Recommendation	Action to Date	Future/Ongoing Activities	Sub-Recommendation(s) not Adopted
♦ 8. Assess existing salmon farms to determine if they are causing significant negative impacts	♦ Farms have been earmarked for relocation based on a comprehensive analysis of any environmental, social and economic impacts incurred at their current sites. ♦ New siting criteria, updated information on site performance, and input from a MWLAP environmental monitoring program informed the analysis of existing sites. ♦ 30 farms have been queued for relocation to better-suited sites through this process. ♦ To-date, 16 relocation proposals have been approved by the province; 4 of these have also received federal approvals.	♦ All 30 farms queued for relocation will eventually be moved to more suitable sites. ♦ Additional farms may be added to the relocation list on an individual basis if warranted.	
❖ 9. Develop and implement consistent guidelines for approving freshwater aquaculture facilities	♦ Joint work between MAFF and MWLAP is underway to revise siting and operational guidelines for freshwater net-cage aquaculture facilities.	♦ Finalize freshwater aquaculture strategy. ♦ Continue refining freshwater siting guidelines.	
❖ 10. Develop and enforce water quality standards for lake cage waste discharges	♦ Water quality standards for lake aquaculture are under development; work is being done jointly by MAFF and MWLAP.	♦ Finalize development of standards; develop compliance and enforcement regime for freshwater waste discharges.	
ESCAPED FARMED SALMON			
♦ 11. Continue to allow farming of Atlantics and Pacifics in suitable areas. Prohibit transgenics	♦ Atlantic and Pacific culture are both allowed; applications for either species are handled in the same manner. ♦ The province has extensive data on coastal streams; all streams within 1km of proposed farm sites are surveyed by the aquaculture company. ♦ Farms are generally not allowed within 1km of streams with anadromous salmon populations. ♦ Provincial policy prohibits commercial culture of transgenic salmon.	♦ Work is ongoing on assessment and classification of streams.	
♦ 12. Eliminate/reduce escapes, primarily through escape prevention strategies	♦ Substantial improvements to farm infrastructure and husbandry practices have resulted in a steady decline of escapes as a percentage of production. ♦ Escape prevention standards passed into regulation October, 2000; these standards were amended and stricter regulations came into force in April 2002. ♦ All farm staff must be trained in escape prevention plans; MAFF has facilitated training sessions and promoted escape prevention education through training manuals, workshops and posters. ♦ Since October 2002, provincial inspections and enforcement activities - including scheduled and unscheduled audits of farm activities and underwater inspections of nets and farm infrastructure - have increased (continued...)	♦ A standardized inspection policy and guidebook for provincial inspectors are both under development. ♦ Ongoing improvements are being made to enforcement and inspection activities. ♦ Escape levels and impacts will be continually monitored and regulations modified in an adaptive management approach.	♦ Province maintains a "zero escapes" objective (not the 3% threshold recommended by the SAR). Any number of escaped fish is treated seriously and operators are subject to enforcement actions if due diligence is not exercised.

Summary of Recommendation	Action to Date	Future/Ongoing Activities	Sub-Recommendation(s) not Adopted
(... continued)	✦ Under the provincial pilot project program, MAFF is monitoring the effectiveness and viability of new and innovative escape prevention technologies. ✦ Industry has supported and assisted in development of enhanced escape prevention measures through adoption of its Code of Practice (http://www.salmonfarmers.org/industry/code.html). ✦ The new Aquaculture Regulation requires companies to develop Best Management Practices Plans (BMPP) specific to escape prevention: by law, all farms must maintain on-site detailed descriptions of operational procedures. Practices that carry an increased risk for escapes receive the greatest attention in the BMPPs.		
✦ 13. Implement stock information collection and reporting system	✦ New escape prevention regulations require enhanced on-farm tracking, monitoring and record-keeping. ✦ Reported escapes are tracked by the Province and by the Atlantic Salmon Watch program (funded in part by the Province). ✦ Escape statistics are available on the MAFF website, including a historical analysis of escape levels and their causes: http://www.agf.gov.bc.ca/fisheries/escape/escape_reports.htm.		
✦ 14. Reduce risk of ecological effects, including: all females; Atlantic watch; escape recovery plans	✦ Escape prevention has been deemed the most effective way of addressing escape issues. ✦ All active farms must have posted escape response plans and must (under regulation) take immediate corrective action in the event of an escape. ✦ Experimentation into non-reproductive Atlantic salmon is being encouraged through the pilot project program. ✦ Province has supported industry's work to develop regional escape response plans in Clayoquot Sound and other areas. ✦ Provincial and federal governments continue to support the Atlantic Salmon Watch (ASW) program. ✦ Scope of ASW stream survey program has expanded, with industry support, to monitor streams for presence of escaped Atlantic salmon; includes First Nations involvement. ✦ Provincial funding has been allocated to support research into the ecological effects of aquaculture (see: http://www.agf.gov.bc.ca/fisheries/rd_main.htm) ✦ A federal (DFO) re-capture permit has been created that can be issued when a significant portion of stock can be recovered from a large escape event.	✦ Provincial and federal governments continue to work together to direct future R&D resources into developing escape prevention technology and practices. ✦ Province will review results of monitoring (Atlantic Salmon Watch, stream surveys, etc.) and respond as necessary by adapting its escape-prevention approach.	

Status of implementation of *SALMON AQUACULTURE REVIEW* recommendations

Summary of Recommendation	Action to Date	Future/Ongoing Activities	Sub-Recommendation(s) not Adopted
FARMED AND WILD FISH HEALTH			
♦ 15. Establish Fish Health Working Committee (FHWC)	♦ This committee has been established with representatives from MAFF, WLAP, DFO (Science and Habitat branches), and industry. ♦ The FHWC will advise on and implement provincial fish health policy initiatives at all fish culture facilities. ♦ The FHWC has established guidelines for Fish Health Management Plans and is providing advice on fish health issues to decision-makers.	♦ FHWC meetings are ongoing. ♦ Additional Provincial funding will be directed to the FHWC in 2003.	
♦ 16. Strengthen disease surveillance and control program	♦ Industry-led fish health database is now in its pilot phase; information on trends in fish health will be accessible by industry and government staff. ♦ MAFF disease auditing and surveillance program began Nov. 1, 2000 and is now sampling 30-40% of active farms approximately every 3 months. ♦ Provincial program will act as an audit for the industry-maintained fish health database. ♦ Provincial fish health staff performed 122 individual farm visits in 2002, sampling 1050 fish for presence of disease and/or disease-causing agents.	♦ Provincial fish health auditing and surveillance program will be expanded, including development of protocols for sea lice monitoring in both farmed and wild salmon. This will be done in conjunction with the federal government and industry. ♦ Consultations are underway with DFO to develop a wild fish health tracking program under the National Aquatic Animal Health Strategy that would include surveillance of wild and farmed stocks for diseases of international concern. ♦ A reportable disease list will be developed as part of the National Aquatic Animal Health Strategy.	♦ A reportable disease list will be incorporated into the national policy, and not addressed within the provincial Animal Disease Control Act, as recommended in the SAR.
♦ 17. Develop standards for fish health management	♦ Content and format of industry's Fish Health Management Plans (FHMPs) have now been defined by MAFF fish health staff. ♦ Guidance is provided to industry regarding the goals and required elements of a FHMP. ♦ Operators of fish culture facilities must ensure that actions taken to prevent, control or treat fish disease are in accordance with existing provincial and federal regulations.	♦ MAFF will be incorporating the FHMP components as a term and condition of the aquaculture licence.	
♦ 18. Improve quality and accessibility of fish health information	♦ Fish health database pilot project initiated September 2001; collects fish health data from all private marine facilities (121) and federal and provincial enhancement (hatchery) facilities (23). This is an industry-led initiative; industry is responsible for reporting farm fish health information into the database. ♦ MAFF is increasing auditing and surveillance to confirm industry's reporting.	♦ Quarterly reports supplied by the database will be used in conjunction with surveillance and auditing data to generate annual fish health reports. These reports will also include data on antibiotic use. Proprietary information will be protected. ♦ Through these reports, government and the public will have access to the results of auditing and surveillance programs and general information on fish health trends.	
♦ 19. Strengthen importation policies/programs	♦ DFO jurisdiction & lead: Improvements have been made to the National Code on Introductions and Transfers. ♦ All provinces signed the National Code on Introductions and Transfers in September 2001.		

Summary of Recommendation	Action to Date	Future/Ongoing Activities	Sub-Recommendation(s) not Adopted
♦ 20. Strengthen sampling & reporting requirements for fish transfers within BC	♦ This objective has been met through the adoption of a national code on introductions and transfers. ♦ The introductions and transfers agreement focuses on addressing ecological and disease concerns. ♦ A strict policy is in place in B.C. permitting the importation of eggs only (no live fish).		
& 21. Enhance fish health inspection practices at fish processing facilities	♦ Canadian Food Inspection Agency jurisdiction	N/A	
♦ 22. Strengthen control of drug use on farms	♦ Amount of medications used on farms is in decline. Only about 3% of feed currently contains any medication. ♦ MAFF maintains a therapeutant database to follow trends in medication use. ♦ Provincial compliance and enforcement strategy ensures drug records are maintained on farms. ♦ All antibiotics in use are prescribed by licensed veterinarians and are administered in feed; antibiotics are never administered to fish in a prophylactic manner.	♦ Quarterly reports on therapeutant use will soon be available on the MAFF website. ♦ Increased research and development efforts will be identified following fish health workshops in 2003; focus will be on drug use and its effectiveness for treating fish diseases such as IHN and sea lice.	
WASTE DISCHARGE			
♦ 23. Ministry of Health and Health Canada to review drug use issues on farms	♦ This is an area of federal (Health Canada) jurisdiction. ♦ An expert advisory committee, with representation from provincial fish health staff and stakeholders, met from 1999 to 2002. The committee released a report in 2002 on antimicrobial resistance which included 38 recommendations to Health Canada and other regulators for better managing and controlling use of antimicrobials in food animals. ♦ The Veterinary Drugs Directorate of Health Canada is working in conjunction with the Canadian Food Inspection Agency and stakeholders to develop a comprehensive policy on identification and management of risks associated with the use of antimicrobial agents in agriculture and aquaculture.	♦ See the Health Canada site for more information: http://www.hc-sc.gc.ca/vetdrugs-medsvet/amr/e_policy_dev.html ♦ The Canadian Food Inspection Agency has responsibility for inspecting and monitoring the content and manufacturing of animal feeds. See: http://www.inspection.gc.ca/english/anima/feebet/feebete.shtml	
♦ 24. Develop regulations for implementing performance-based waste management model	♦ A new Finfish Aquaculture Waste Control Regulation came into effect September 12, 2002. ♦ The chemical, physical, and biological data collected from farms during a 2000 sampling program were used to support the development of the new standards by MWLAP. ♦ The regulation includes provisions for farm registration, pre-stocking sampling, domestic sewage handling, best management practices, monitoring and reporting, remediation, offences and penalties (continued...)	♦ A formal structure for reporting of environmental monitoring results (as required under the regulation) is being developed by MWLAP. ♦ The regulation will be reviewed within three to five years to evaluate its effectiveness; amendments may be made if required.	

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(...continued)	↓ Farm registration process is underway and MWLAP has begun its auditing and inspection program. ↓ The recommendation for a "performance-based" model is fulfilled by setting standards that must be met for specific chemical and biological indicators (previously, production levels and feed usage were regulated, rather than environmental results). ↓ Specific monitoring/remediation activities must be carried out if indicator levels are exceeded.		
↓ 25. Government should test criteria for establishing benthic sediment standards to ensure feasibility and consistency with government policy	↓ The sediment standards in the new Finfish Aquaculture Waste Control Regulation were based on results of a 2000 MELP sampling program, consultation with an inter-agency scientific advisory group, and other scientific advice. ↓ Sampling protocols for testing chemical and biological parameters are included in an appendix to the regulation. ↓ Sampling across the site area and at reference stations must meet high standards and may require third-party specialists.		
& 26. If no waste standards in 18 months, adopt New Brunswick standards	N/A – waste standards are now in place	N/A	
↓ 27. Apply existing waste standards until performance-based regulations enacted	↓ Performance-based regulations enacted April 12, 2002. ↓ Before the new regulation, farms were required to implement a monitoring program through the existing regulatory framework.		
↓ 28. Establish farm registry and prescribe fees under new regulations	↓ The Finfish Aquaculture Waste Control Regulation (Section 3) requires operators to register a facility before it may be stocked. ↓ Also under this regulation (Section 12), all sites must pay an annual fee consistent with the fee structure described in the Waste Management Permit Fee Regulation. ↓ Reporting of annual feed usage was in place before the new regulation, and will continue.		
↓ 29. Develop regulatory provisions to ensure consistent enforcement and audit of company monitoring data	↓ The industry's environmental monitoring data is audited by government through periodic sampling programs (MWLAP). ↓ A multi-agency compliance strategy has been developed and an agreement is now in place to streamline farm inspections and investigations between MAFF, MWLAP, MSRM and LWBC. ↓ The new regulation includes requirements for effective monitoring and reporting, and penalty sections for not complying with these requirements. ↓ Monitoring data is assessed and audited by WLAP. Field sampling by WLAP staff will be used to audit specific farms. ↓ Mitigation strategies/remedial action plan required under section 11 of the regulation.	↓ Audits of company monitoring information will continue through government sampling programs. ↓ Development of fines for "ticket offences" is under consideration.	

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♦ 30. Identify sites with benthic impacts and develop remediation plans	♦ Sites with potential or probable benthic impacts have been identified and farms have been notified of the need to take steps to comply with the new waste regulation. ♦ Farms that are unlikely to meet the new standards in the regulation will be required to relocate to a new site (see #8).		
♦ 31. Undertake research to assess impacts on shellfish and other wild fishery resources	♦ Provincial funding has been earmarked for research and development on salmon aquaculture issues. ♦ BC Aquaculture R&D Committee (BCARDC) was established in 2001 to identify research priorities for both the shellfish and finfish aquaculture industries. ♦ Province has committed $5.1 million to fund research initiatives - $3.75M of this for the Aquaculture and Environment Fund which provides support for research in areas of environmental concern in aquaculture. ♦ DFO's science branch is undertaking studies of both near-field and far-field effects of salmon farms. ♦ Health Canada is examining topics on aquaculture and shellfish contamination. ♦ The Aquaculture Collaborative R&D Program (an industry-DFO partnership) is researching the effects of finfish aquaculture on shellfish.	♦ Additional research activities will be identified on an ongoing basis by BCARDC and other scientific advisors. ♦ Research priorities specific to fish health will be developed following technical workshops taking place in 2003. ♦ DFO's sea lice action plan includes commitments to increase monitoring and research into fish health.	
♦ 32. Review existing policy prohibiting polyculture	♦ This policy has been reviewed by provincial staff and no changes are currently proposed to the existing policy.	♦ Polyculture opportunities may be provided by the development of non-salmon species aquaculture; this option may be revisited in the future.	
♦ 33. Incorporate waste monitoring results in MAFF site assessment model (once performance standards have been set).	♦ A model that projects deposition from sites is used by MAFF to assist with evaluation of applications for new sites and for a change to production levels. ♦ This model is now undergoing calibration through input of data from extensive real-world monitoring programs that will allow it to more accurately predict waste dispersion at proposed farm sites.	♦ Calibration of the modeling program will be completed by March 2003, and applied to all new site applications by summer 2003.	♦ The optional sub-recommendation to incorporate siltation and pharmacokinetics of antibiotics into the model has not been adopted.
INTERACTIONS			
♦ 34. Implement enforceable predation prevention plans	♦ Under the new Aquaculture Regulation, all operators must develop Best Management Practices Plans (BMPPs) to guide activities that could lead to escapes. These include requirements to describe predator-attack prevention methods. ♦ Appendix 2 of the Aquaculture Regulation specifies standards for farm structures that must be followed in order to prevent attacks and damage by predators. ♦ Industry has contributed to improvement of predator prevention standards through development and implementation of its Code of Practice (continued...).	♦ The province will continue to work with the federal government and industry to improve predator prevention technologies and practices, including directing R&D resources to this area.	

Summary of Recommendation	Action to Date	Future/Ongoing Activities	Sub-Recommendation(s) not Adopted
(…continued)	♣ Management of marine mammals and other predators falls under federal jurisdiction. DFO is in the process of refining its marine mammal program in consultation with industry in order to better address the issue of farm predation.		
♣ 35. Control killing of predators at farms sites	♣ Killing of predators is only allowed under strict circumstances and with appropriate permits in place. ♣ Accurate records of all predator kills are maintained by DFO and MWLAP. ♣ Workshops are underway between the BC Salmon Farmers' Association and government to discuss and develop non-lethal predator-deterrent practices and technologies. ♣ All farms are required to submit BMPPs for predator prevention and escape prevention that are enforced as a condition of the MAFF aquaculture licence.	♣ Sites experiencing recurring problems with predation may be subject to relocation under the relocation initiative. ♣ Licensing policies and procedures at DFO are under review and will be refined. Revised marine mammal control program is expected by January 2004.	
♣ 36. Discontinue use of acoustic deterrent devices (ADDs)	♣ The number of ADDs in use in the province has declined from 17 units at the conclusion of the SAR to only one today. ♣ The federal government is exploring alternative mechanisms for reducing interactions with marine mammals and industry is increasingly relying on non-acoustic deterrent techniques.	♣ The Province will continue to work with DFO and industry toward a complete phase-out of the final ADD.	
○ 37. Restrict night lighting pending further research	♣ Some research has been conducted by DFO regarding interactions between farmed and wild fish in photo-manipulated periods (unpublished to date).	♣ Further collaborative research has been proposed between First Nation groups and industry to determine the possible effects directly related to night lights. ♣ Further research is necessary.	
FIRST NATIONS ISSUES			
♣ 38. Develop strategies to address First Nations concerns regarding siting	♣ LWBC carries out consultations with First Nations in accordance with its Aboriginal Interest Assessment Procedures and the provincial consultation guidelines. ♣ First Nations are consulted for possible infringement of aboriginal rights by way of application referrals and open houses. ♣ The province holds frequent formal meetings (e.g. SAIAC) and informal meetings with concerned First Nation groups. ♣ Province provided $50,000 in funding for the September 2002 First Nations and Aquaculture Summit. ♣ Farmers are advised to initiate dialogue with First Nations when researching and assessing a new site. ♣ Federal government also consults with First Nations; this is partially co-ordinated with provincial consultations.		
♣ 39. Involve First Nations in policy development and research management.	♣ First Nations have representation on SAIAC, providing broad policy advice to the province on aquaculture issues. ♣ First Nations have been trained for and completed stream monitoring work through the Atlantic Salmon Watch Program. ♣ First Nations groups are partners in two pilot projects; another pilot project is strongly supported by the local First Nation. ♣ First Nation/industry joint ventures are in place at existing farms (e.g. Kitasoo band). ♣ Province and industry broadly support First Nations training.	♣ Province will continue to explore options for furthering efforts in this area. Fostering and developing sound relationships with First Nations is a provincial priority, and First Nation input in policy development is highly valued.	

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MANAGING RISK			
✦ 40. Undertake research, trials and inventory investigations on a prioritized basis, and ensure equitable cost sharing with industry.	✦ The Science Council of BC is leading research and development activities. ✦ The BC Aquaculture and Environment Fund was established in 2002 with $3.75M in funding from the Province to provide support for research in areas of concern to British Columbians. ✦ The University of BC and DFO have jointly established a Centre for Aquaculture and the Environment. Its mission is to conduct leading edge research and education, and to pursue critical environmental protection and sustainable aquaculture. A chair at the centre is partially funded by the province (with $1.25M). ✦ Federal and Provincial governments have established an aquaculture R&D initiative, and industry and environmental organizations are collaboratively pursuing a strategy for directing R&D funding to areas that will support a sustainable aquaculture industry. ✦ The federal $20M Aquaculture Collaborative R&D Fund has funded projects in BC. Funding is approximately $4.5M per year. ✦ Aquanet, a national network of centres of excellence, supports aquaculture research initiatives across Canada in conjunction with industry and university partners. It has three research themes: animal production, environmental integrity and socio-economic development. It is funded by federal research councils.	✦ Legislation is under development to apply a levy to industry for R&D activities.	
✦ 41. Use performance-based programs supported by comprehensive monitoring	✦ New escapes and wastes programs employ performance-based models. ✦ Programs for site allocation, escapes, fish health, waste management and pilot projects all incorporate comprehensive monitoring.	✦ Programs will be continually developed and refined.	
NEW TECHNOLOGY			
○ 42. Develop policy for exposed offshore open marine systems	✦ A proposal for an offshore system was received through the Pilot Project Technology Initiative; however, its technical merits were lower than other proposals and it was not approved.		✦ Policy on exposed offshore open marine systems is currently a low priority due to technological hurdles and limited interest from industry; this may be developed in the future if interest warrants.
✦ 43. Initiate pilot projects for closed marine systems	✦ Pilot project program was launched in 2000 to explore potential applications of new aquaculture technologies. ✦ Three pilot projects are now operational: ▪ one testing the use of alternate protein feeds and new feeding technologies in a marine-based closed-bag system, ▪ one using a marine-based closed-bag system with waste recovery (continued…),	✦ A report on the first production cycle using experimental technology will soon be available (check the MAFF aquaculture website).	

Summary of Recommendation	Action to Date	Future/Ongoing Activities	Sub-Recommendation(s) not Adopted
(...continued)	▪ one using a land-based tank system. ↓ The tank system has harvested fish and has a contract with Thrifty Foods which markets and sells the farmed Pacific salmon as environmentally friendly "eco salmon."	↓ Monitoring of the remaining pilots is ongoing.	
❖ 44. Establish industry funding commitment for research and development	↓ Legislation is being developed to collect levies for a Research and Development fund. ↓ The federal Aquaculture Collaborative R&D Program requires a contribution from industry. ↓ Federal government has invested $12.5M in environmental and biological sciences over the next 5 years.	↓ Assign levy amount and develop funding mechanisms.	
DISPUTE AVOIDANCE/RESOLUTION			
↓ 45. Improve dispute settlement mechanisms	↓ Inter-agency coordination has been improved (via the FFRC and informal channels), and dialogue between provincial agencies and DFO is ongoing. ↓ LWBC sends farm applications on a site-specific basis to relevant provincial and federal agencies as well as Regional Districts, First Nations and some resource-user groups that may be potentially affected. ↓ Enhanced consultation has been developed: local open houses are held for every new site application (more than one may be held for a single site, depending on local interest and location); LWBC coordinates these but farmers may be asked to assist in organising or funding open houses. ↓ Environmental groups, fed/prov/local/First Nation governments and industry all provide broad policy advice through SAIAC. ↓ Farmers are encouraged to contact concerned groups directly and to identify and make efforts to resolve any outstanding disputes/issues stemming from site applications.	↓ All site applications and their review/approval status are now available on the LWBC website. ↓ The province recognizes a need for broader input and has taken preliminary steps toward establishing a Salmon Aquaculture Forum that would see increased communication and cooperation between scientists, industry, First Nations, and environmental groups.	
↓ 46. Develop integrated strategic policy objectives for salmon aquaculture	↓ The Provincial government has developed and implemented a series of policies and regulations for aquaculture (the Provincial Salmon Aquaculture Policy Framework). ↓ The Provincial aquaculture policy addresses all "sustainability principles for resource management in B.C." as developed by MSRM (presented in draft form to Cabinet, May, 2002). ↓ The Province has adopted an aquaculture vision statement: "An economically competitive industry that develops in an environmentally and socially sustainable manner." ↓ Inter-agency Directors' Aquaculture Committee was formed in October 2001 to coordinate aquaculture policy and program development. Member agencies include MAFF, MSRM, LWBC, MWLAP and DFO.	↓ Implementation of Provincial policies is ongoing.	

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✦ 47. Re-establish a broad based group to advise government	✦ SAIAC has been established specifically to meet this recommendation.		
IMPLEMENTATION			
✦ 48. Develop a Salmon Aquaculture Code of Practice	✦ Industry has developed and adopted a Code of Practice for operation of salmon farms. ✦ Best Management Practices Plans (BMPPs) are now required under two provincial regulations (Aquaculture Regulation and Waste Regulation). In these plans, industry must describe how specific operational activities on the farm will be conducted in order to prevent and mitigate negative environmental impacts. ✦ Farmers must have BMPPs in place on-site by 2003. ✦ Some of the functions described in this recommendation are being assumed by the application guide for industry (e.g. to assist industry in developing farm management plans, describe the processes for applying for tenures/licences – see #5).	✦ Government is reviewing the industry Code of Practice and may incorporate components of this into future regulatory/licensing changes.	
✦ 49. Change legislative, regulatory and policy framework	✦ Amendments have been made over the past three years to the Aquaculture Regulation under the provincial Fisheries Act and to the Finfish Aquaculture Waste Control Regulation under the provincial Waste Management Act. ✦ Both the above acts require development of a Best Management Practices Plan for use on all farms (see #48). ✦ Industry-developed Code of Practice has been adopted. ✦ Federally, Navigable Waters Protection Act, Canadian Environmental Assessment Act and Fisheries Act guidelines have been developed.	✦ Options are being explored for streamlining the provincial licence review and approval process, including co-operative work with the federal government. ✦ The province is reviewing the existing legislative and regulatory framework around salmon aquaculture and will examine the adequacy of current enforcement mechanisms (e.g. levels of fines and other sanctions). ✦ The province will also be reviewing its licensing authority and the adequacy of its legal authority around disease monitoring requirements.	✦ No amendments made to date to the Animal Disease Control Act

MAFF = Ministry of Agriculture, Food and Fisheries; **MSRM** = Ministry of Sustainable Resource Management; **MWLAP** = Ministry of Water, Land and Air Protection; **LWBC** = Land and Water British Columbia Inc.
DFO = Department of Fisheries and Oceans Canada

Summary of recommendation status

✦ Implemented in full (39)
❖ Partially implemented (6)
○ No work to date (2)
& Not applicable (2)